Appendix A

Qualifications of Installation Assessment Team

BIOGRAPHICAL DATA

ROBERT L. NEBEKER
SENIOR ENGINEER

EDUCATION

BS ChE (Chemical Engineering), 1964 University of Utah, Salt Lake City, Utah.

Master of Nuclear Science, 1969 University of Idaho, Moscow, Idaho.

PROFESSIONAL AFFILIATION

American Institute of Chemical Engineers, including Nuclear Engineering Division

EXPERIENCE RECORD

1964-1967 Phillips Petroleum Company and Idaho Nuclear Company, Idaho Falls, Idaho.
Nuclear Test Reactor Engineer

1967-1972 Idaho Nuclear Company and Allied Chemical Corporation, Idaho Falls, Idaho.
Research Engineer
Pilot Plant Development and Safety Review

1972-1978 Allied Chemical Corporation, Idaho Falls, Idaho
Group Leader
Safety Review, Transuranic Waste Management, Environmental Impact Statement Preparation, Pilot Plant Design

1978-1981 Allied Chemical Corporation/Exxon Nuclear Idaho Company, Idaho Falls, Idaho
Subsection Manager
Pilot Plant Development (Waste Management), Environmental Impact Statement Preparation

1981-1985 Exxon Nuclear Idaho Company/Westinghouse Idaho Nuclear Company, Idaho Falls, Idaho
Senior Engineer
Planning, Program Control

1985-Present Westinghouse Idaho Nuclear Company, Idaho Falls, Idaho
Senior Engineer
Low-Level and Hazardous Waste Management

BIOGRAPHICAL DATA

D. JOAN POLAND
ENVIRONMENTAL ENGINEER II

EDUCATION

BS Geology, 1984
Idaho State University, Pocatello, Idaho

PROFESSIONAL AFFILIATION

American Association of Petroleum Geologists, Inc.
Idaho Association of Professional Geologists

EXPERIENCE RECORD

1983-1984 Idaho State University, Pocatello, Idaho
Department of Geology and Museum of National History
Work Study

1984-1985 EG&G Idaho, Inc., Idaho Falls, Idaho
Associate Scientist, Environmental Sciences Section
Environmental impact assessments and evaluations

1985-Present Westinghouse Idaho Nuclear Company, Idaho Falls, Idaho
Environmental Engineer II
Direct cleanup operations and assure compliance with CERCLA, RCRA, and TSCA

BIOGRAPHICAL DATA

GEORGE E. BUKER
ENVIRONMENTAL ENGINEER III

EDUCATION

BS, Mechanical Engineering Technology, 1980
Montana State University, Boseman, Montana

PROFESSIONAL AFFILIATION

Associated Students of Mechanical Engineering Technology

EXPERIENCE RECORD

1980-1984 Bechtel Power Corporation, SFPD
Colstrip Units 3 and 4, Colstrip Montana
Engineer, Mechanical Piping Division

1984-1985 Bechtel Energy Corporation, LSPD
South Texas Project, Bay City, Texas
Engineer, Mechanical Piping Division

1985-Present Westinghouse Idaho Nuclear Company, Idaho Falls, Idaho
Environmental Engineer III
Instrumentation and Quality Assurance

Appendix B

INSTALLATION HISTORY, ORGANIZATION AND MISSION

The ICPP is owned and administered by DOE primarily for recovering uranium from spent reactor fuels. A secondary but important purpose of the ICPP is the development of improved fuel processing and waste management methods. Initially completed in 1951, the ICPP began nuclear fuel processing in 1953 and has been expanded greatly since then. Changes are continually being made to upgrade existing facilities and to add processing capability as required.

The ICPP processes highly enriched ($\geq$ 20% U-235) research, test, and propulsion reactors fuels. These fuels are clad with aluminum, zircon- ium, or stainless steel and contain uranium alloys or uranium in other various physical forms. Special fuels or fuel material occasionally are processed using customized processes and equipment in a hot cell facility.

Because of the complex compositions of highly enriched reactor fuels, the fuel mixture and fuel cladding materials generally are not separable by mechanical means, and thus the processes involved are dictated by compounds used to dilute, disperse, and encase the uranium. The processes used incorporate acid dissolution of fuel materials, liquid-liquid solvent extraction to separate and purify the uranium, and evaporation and decomposition (called denitration in this system) of the uranium product solution to a solid UO_3 product. The UO_3 product is shipped to other DOE facilities as directed by DOE.

The high level radioactive liquid wastes from fuel reprocessing operations are collected in stainless steel tanks within underground concrete vaults. This liquid waste is calcined to solid granules in the New Waste Calcining Facility (NWCF), and the resultant high-level radioactive solid waste is stored in stainless steel bins within underground concrete

vaults. Other liquid and gaseous waste streams are processed as necessary to comply with the appropriate limits established for release to the environment. All effluents are monitored to detect any deviations from expected contamination levels. Ultimately, all radioactive wastes not suitable for release to the environment are converted to solid wastes and are stored or disposed in accordance with procedures approved by DOE.

Within the confines of the ICPP area are all the facilities necessary to receive, store, process, and recover U-235 from spent reactor fuels. The process begins with the receipt of shielded casks of spent irradiated reactor fuels. These casks arrive by truck or rail. The fuel is removed from shipping casks and stored underwater. If the fuel is not suitable for underwater storage (e.g., graphite fuel), it is stored either above or below ground in special dry storage facilities.

Fuel processing at ICPP begins with dissolution in acid, using one of several headend operations. For example, aluminum-alloyed fuel is dissolved in nitric acid, using a mercuric nitrate catalyst. This results in a solution containing uranyl nitrate and fission product nitrates. Zirconium-clad fuel is dissolved in hydrofluoric acid and complexed with aluminum nitrate. In one former instance, (graphite fuel) dissolution was preceded by a combustion step. The fuel solution is then contacted with an organic solvent, tributyl phosphate (TBP), in a normal paraffin hydrocarbon diluent. The uranium is extracted by the solvent, leaving most of the radioactive fission products and other fuel components in the aqueous solution. Uranium is stripped from the solvent by water and extracted two more times with another organic solvent, methyl isobutyl ketone (hexone), for further purification.

Solvents are decontaminated before recycling or disposal. Fission products from the first-cycle extraction, as well as the small losses of fissile material contained in the aqueous raffinate, are collected in cooled, high-integrity stainless steel storage tanks, with secondary containment provided by concrete vaults. Aqueous raffinate from later extraction cycles is collected in similar uncooled tanks. The liquids in

these tanks are then calcined to solid radioactive wastes, which are stored in air cooled, stainless-steel bins in underground concrete vaults.

The final product stream is a uranyl nitrate solution, practically free of fission products and other impurities. The uranyl nitrate solution is evaporated and decomposed (denitrated) to uranium trioxide (UO_3) granules and shipped to other DOE facilities for reuse.

APPENDIX C
Environmental Setting

C.1 Vegetation and Habitats

The INEL is dominated by sagebrush, rabbitbrush, and various species of bunchgrass. Other locally important shrubs include winterfat, shadscale saltbush, Nuttall saltbush, and gray horsebrush. Bottlebrush squirreltail, needle-and-thread grass, Great Basin wildrye, bluebunch wheatgrass, thickspike wheatgrass, and bluegrass are the most abundant grass species. Common forbs include dandelion, milkvetch, phlox, hawksbeard, and yellow salsify. Three-hundred and ninety-four vascular plant species were reported on the INEL, and five more species have been recently added for a total of 299.

Nonnative habitats also occur on or around the INEL. These include approximately 9880 acres of the INEL that were seeded with cres- ted wheatgrass in the late 1950s.

Dominant vegetation existing on and adjacent to the INEL includes sagebrush, juniper, crested wheatgrass, and Indian ricegrass. Sagebrush provides the largest habitat on the INEL and is important to many animal species.

Juniper communities occur in the northwest and southeast portions of the INEL. These communities are generally associated with increasing elevation and are found near East and Middle Buttes and in the foothills of the Lemhi Range. Although these communities are restricted in distribution, they provide important nesting habitat for raptors and are used by a number of passerine species.

Crested wheatgrass seedings are found throughout the INEL. These seedings have existed on the INEL for 25 or more years, with little evidence of reinvasion by native species. Limited dispersal from the native community and abundant seed production by crested wheatgrass perpetuate this community.

A grass community dominated by Indian ricegrass occurs in a relatively narrow band near the eastern border of the INEL. This community apparently represents an old burn and also contains needle-and-thread grass and bottlebrush squirreltail.

Irrigated farmland borders much of the INEL, interspersing agriculture and sagebrush habitats. Much of the farmland is planted with alfalfa, but fields of wheat, potatoes, and irrigated pasture are also planted. These areas are used extensively by a number of passerine species, as well as by four species of game birds; mourning doves, pheasants, gray partridge, and sage grouse. About 37% of the INEL boundary is bordered by irrigated farmland and 60-70% of the INEL is grazed by cattle and sheep.

Although the INEL is dominated by sagebrush/grass uplands, over 2000 acres of wetlands may temporarily exist on the INEL during periods of high water flow in the Big Lost River. The Big Lost River spreading areas and the Big Lost River sinks are major wetlands on the INEL. These wetlands provide habitat for migratory waterfowl, shorebirds, and other wildlife species.

C.2 Fauna

A diverse insect population is associated with sagebrush communities and is an integral part of the rangeland ecosystem.

One amphibian and nine reptile species have been recorded on the INEL. Published reports indicate that an additional five reptile and five amphibian species may be found on the INEL. The only amphibian observed on the INEL is the Great Basin spadefoot toad. This species remains burrowed in the soil until moisture conditions are adequate for breeding. Of the nine reptile species occurring, the short-horned lizard, sagebrush lizard, gopher snake, and western rattlesnake occur commonly throughout the INEL.

At some time during the year, 159 bird species are found on the INEL and 15 additional species have been listed as possible occurrences. Twenty-nine species of game birds have been recorded on the INEL, 23 of which are species of waterfowl (including coots and common snipe). Sage grouse are the most common resident game bird on the INEL, which provides an important wintering and breeding/nesting habitat for this species. Although many grouse migrate from wintering/breeding ranges on the INEL to offsite areas, some grouse summer near INEL facilities and the Big Lost River. The pheasant, gray partridge, chukar, blue grouse, and mourning dove are other game birds found on the INEL. All except the mourning dove are uncommon; only one observation of a blue grouse has been reported on the INEL.

Sixty-nine species of passerines have been recorded on the INEL. Of these, the most common species include the horned lark, black-billed magpie, robin, sage thrasher, Brewer's sparrow, sage sparrow, and western meadowlark. These species occur throughout the INEL. The sage sparrow, Brewer's sparrow, and sage thrasher are the most common nongame bird species breeding the INEL.

The INEL is an important nesting and wintering area for raptors. Twenty-two species of raptors have been observed on the INEL. American rough-legged hawks, American Kestrels, prairie falcons, and golden eagles are the most abundant raptors observed on the INEL during the nonbreeding season. The most abundant breeding raptors on the site are American Kestrels and long-eared owls.

Thirty-seven species of mammals are found on the INEL. Eighteen of these species are rodents. The Townsend's ground squirrel, least chipmunk, Great Basin pocket mouse, Ord's kangaroo rat, western harvest mouse, deer mouse, bushy-tailed wood rat, and montane vole are the most common small mammals on the INEL. These animals are also relatively common throughout sagebrush regions of the Intermountain West.

Four species of leporids occur on the INEL: Black-tailed jack rabbits, white-tailed jack rabbits, Nuttall cottontails, and pygmy rabbits. All but the white-tailed jack rabbit are considered abundant.

Six species of carnivores occur on the INEL. Of these, the coyote, long-tailed weasel, and the badger are considered common. The bobcat occurs throughout the INEL but is generally uncommon. The mountain lion is considered rare. The spotted skunk is generally uncommon, but can be found in basalt outcrops.

The INEL supports resident populations of mule deer and pronghorn. Mule deer are considered uncommon and are generally concentrated in the southern and central portion of the INEL. They occur in greater numbers on the buttes and mountains surrounding the INEL. Pronghorn are found throughout the INEL and are generally considered abundant. Most pronghorn in south eastern Idaho are migratory. During winter, 4500 to 6000 pronghorn, or about 30% of Idaho's total population, may be on the INEL.

C.3 Important Habitats

Important habitats are those which are necessary for maintaining a viable wildlife population or which have a limited distribution on the INEL -- and could thus be eradicated by a perturbation (e.g., a fire). Because many wildlife species on the INEL are sagebrush obligates, all sagebrush habitats within the INEL are important. However, the northern end of the INEL contains an interspersion of low sagebrush and big sagebrush habitats that provides critical winter and spring range for sage grouse and pronghorn.

Juniper communities on and adjacent to the INEL are important to nesting raptors and several species of songbirds. The Big Lost River sinks provide wetlands in an area where this habitat type is generally lacking. When water is present, the sinks are used by a large number of waterfowl and shorebird species. The relatively limited areas of these habitats and their importance to wildlife suggest that they should also be considered important.

C-4. Aquatic Ecology

Aquatic habitat on the INEL consists of evaporation and percolation ponds and the Big Lost River and associated sinks and spreading areas. Aquatic

and littoral vegetation associated with distributed sites are likely to predominate around the man-made ponds. Littoral plants include thistle, speedwell, wild lettuce, wheatgrass, wild barley, and willow. Sedges, cattails, and rushes are the most common macrophytes. The surrounding vegetation of all ponds is dominated by big sagebrush.

The Big Lost River flows across approximately 31 miles of the INEL, from the southwest to north, before it terminates in the Big Lost River sinks, which contribute to the Snake River Plain Aquifer. Plains cottonwood is the primary riparian species along the river.

Appendix D

HAZARD RANKING SYSTEM[a]

Appendix D

HAZARD RANKING SYSTEM[a]

The Hazard Ranking System (HRS) was developed to distinguish between those abandoned waste sites that may pose human health or environmental problems from those that do not. Each waste site is evaluated using a series of standard questions that examine several aspects of the site, and numerical scores are assigned according to prescribed guidelines.

To use the HRS, one collects information on exposure routes, examines the characteristics of the waste, and then assesses the potential targets in the vicinity. While the system does not provide an absolute assessment of potential risk, it is one of the few tools available for comparing a diverse number of waste sites.

The HRS consists of several work sheets that are used to group the information about the site. Each work sheet covers one potential route of release of (or exposure to) hazardous material from the site. The routes are: migration of the hazardous material through 1) air, 2) surface water and 3) ground water; 4) exposure by fire or explosion; and 5) exposure by direct contact with material at the site. The work sheets aid in the evaluation of the characteristics of each exposure route (including such things as amount of rain fall and soil permeability), the characteristics of the waste(the degree of hazard presented by the waste), and the targets (people or sensitive environments) near the site. A score is given for each of the five routes of exposure, and an overall site ranking is generated by weighting each of the individual route scores.

The modified Hazard Ranking System (mHRS) was developed to work within the framework of the EPA's HRS without changing the overall scoring system. The design of the HRS permitted a modification that allowed

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(a) See Reference 3 in section 8.0

radioactive and chemical wastes to be evaluated separately without having radioactive and chemical wastes to be evaluated separately without having to duplicate information used to evaluate other aspects of the waste site.

The modifications to the HRS for radioactive waste sites were restricted to the waste characteristics category of the ground-water, surface-water, air, fire and explosion, and direct contact routes. this approach allowed for the common use of information in the route characteristics and targets sections of the HRS, which are pertinent to the radioactive, as well as to the nonradioactive, constituents of the site.

The mHRS splits the waste characteristics categories into two subsections: 1) radioactive wastes and 2) chemical wastes. A "separate but equal" approach was taken in that the relative hazards of the radioactive and nonradioactive constituents are evaluated separately and the scores assigned over the same range of values.

The scores for the radioactive wastes and chemical wastes are calculated separately and then compared. The higher the score is the value assigned the site.

Ranking scores from evaluation of the ICPP Waste Sites follow.

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

MAH-FE-304 Injection Well.

Score: S_M = 34

S_{FE} =

S_{DC} =

Total = 34

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 (46)	1	45	46	3.1
If Observed Release is Given a Score of 46, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score			—	15	
3 Containment	0 1 2 3	1	—	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 (1) 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)		4a. 4b.	19 1	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 46, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical / Radioactive	38,345	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 58.2$		

$Sm = 58.2 / 1.73 = 34$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Tank Farm = Sept. 1975 Cont. Soil incident.

Score: S_M = 18

S_{FE} =

S_{DC} =

Total = 18

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
	Total Route Characteristics Score		6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (15)	1		15	
Hazardous Waste Quantity	0 1 2 (3) 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 11 15 21 (26)	1		26	
	Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)	4a. 4b.	21 26	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
	Total Targets Score		39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]	Chemical			57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]	Radioactive		18,252		
[7] Divide Line [6] by 57,330 and Multiply by 100	$S'_{gw} = S^c_{gw} = 31.8$				

$Sm = 31.8/1.73 = 18$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Transformer Yard CPP-705 PCBs.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. ~~Toxicity/Persistence~~	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. / 4b.	18 / 0	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]. If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical / Radioactive	3,338	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} =$	23.3	

$S_M = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Transformer yard CPP-731 PCBs.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4.					
If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a.	18	26	
		4b.	0		
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical	13,338	57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100		$S'_{gw} = S^c_{gw}$		23.3	

$Sm = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

PCB - Staging Area W. of CPP-660.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1, b.2.)		4a. 4b.	4	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical / Radioactive	13,338	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			S^c_{gw} = S^s_{gw} = 23.3		

$Sm = 23.3 / 1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Paint and Paint Solvent Storage Area by CPP-697.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
	Total Route Characteristics Score		6	15	
3 ~~Containment~~	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistance	0 3 6 9 12 14 (18)	1		18	
~~Hazardous Waste~~ Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
	Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)	4a. 4b.	18 0	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
	Total Targets Score		39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical	~~2,320~~	57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100		S'_{gw} = S^s_{gw} =		23.3	

$S_m = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

T-15 Hg contamination soil.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. ~~Toxicity/Persistence~~	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26 1			26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26 1			26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	19 1	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	13,338	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100		$S'_{gw} = S^2_{gw} = 23.3$			

$Sm = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Courtyard CPP-637 Zirc. Fluoride release.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	19 / 1	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]. If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical / Radioactive	13,338	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} =$	23.3	

$Sm = 23.3 / 1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Oct. 1974 South of Tank 181 Tank Farm.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 11 (15) 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a.	18	26	
		4b.	15		
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 14 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical	13,338	57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100		$S'_{gw} = S^0_{gw} = 23.3$			

$SM = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

April 1974 Cont. Soil near CPP-604 E of CPP-604 by Stack.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26 1			26	
b.2 Maximum Potential	0 1 3 7 11 (15) 21 26 1			26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	18 13	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical	13,338	57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100		$S'_{gw} = S^c_{gw}$		= 23.3	

$Sm = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Valve Box B-4 NW 50 ft.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
	Total Route Characteristics Score		6	18	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 (11) 15 21 26	1		26	
	Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)	4a. 4b.	19 11	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
	Total Targets Score		39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	13,338	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} =$ 23.3		

$Sm = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Valve Box B-4 SW.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0)	45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4].						
If Observed Release is Given a Score of 0, Proceed to Line [2].						
[2] Route Characteristics						3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 (2) 3	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics						3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 12 14 (15)	1		15	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 (11) 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)		4a. 4b.	19 11	26	
[5] Targets						3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	13,338	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100			S'_{gw} = S^c_{gw} = 23.3		

$S_M = 23.3 / 1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Contaminated Soil Northeast of CPP-604 by WM-102.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. ~~Toxicity/Persistence~~	0 3 6 9 12 14 (15)	1		15	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	14 7	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical	18,330	57,330	
		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^s_{gw}$ = 23		

$Sm = 23.3/1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Contaminated soil buried in NE security zone.

Score: S_M = 13

S_{FE} =

S_{DC} =

Total = 13

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	0 3 6 9 12 14 (18)	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 1 3 (7) 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	18 7	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical Radioactive	13,338	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} =$	23.3	

$S_M = 23.3 / 1.73 = 13$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Asbestos.

Score: S_M = 12

S_{FE} =

S_{DC} =

Total = 12

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	0 (46)	1	45	46	5.1

Date and Location: Summer 1985 - CPP. 601, 602, 603, 604, 605, 606, and CPP.

Sampling Protocol: Soil Sample - Microscopic Analysis

If Line [1] is 0, the S_g = 0. Enter on Line [5].
If Line [1] is 46. Then Proceed to Line [2].

[2] Waste Characteristics — 5.2

a. Chemical				
Reactivity and Incompatibility	(0) 1 2 3	1		3
Toxicity	0 1 (2) 3	3		9
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8
b. Radioactive	(0) 2 5 8 12 16 20	1		20
Total Waste Characteristics Score		2a.	3	20
		2b.	0	

[3] Targets — 5.3

Population Within 4-Mile Radius	0 9 12 15 18 / 21 (24) 27 30	1		30
Distance to Sensitive Environment	(0) 1 2 3	2		6
Land Use	(0) 1 2 3	1		3
Total Targets Score			24	39

[4] Multiply [1] x [2a] x [3]: Chemical 7560; Radioactive ; 38,100

[5] Divide Line [4] by 38,100 and Multiply by 100: S_g = S_g = 21.5

$S_M = 21.5/1.73 = 12$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

CPP-633 French Drain (Excess Chemical Waste).

Score: S_M = 11

S_{FE} =

S_{DC} =

Total = 11

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 1 2 3 4 5 (6) 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)		4a. 4b.	15 9	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical	10,530	57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive			
7 Divide Line 6 by 57,330 and Multiply by 100		$S'_{gw} = S^s_{gw} =$	18.4		

$Sm = 18.4/1.73 = 11$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Line from CPP-633 to WL-102 2 releases to same unit.

Score: S_M = 11

S_{FE} =

S_{DC} =

Total = 11

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
~~Depth to Aquifer of~~ Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
~~Physical State~~	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 11 (15) 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)		4a.	10	26	
		4b.	15		
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / ~~12~~ 16 18 20 / 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical		57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive	10,530		
[7] Divide Line [6] by 57,330 and Multiply by 100			S'_{gw} = S^2_{gw} = 18.4		

$S_m = 18.4/1.73 = 11$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Kerosene spill by WDS-100 9-24-83.

Score: S_M = 9

S_{FE} =

S_{DC} =

Total = 9

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 (12) 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1, b.2.)		4a. 4b.	13 0	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5] If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical Radioactive	9,126	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100		S'_{gw} = S^c_{gw} = 15.9			

$S_M = 15.9 / 1.73 = 9$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

CPP-637 Acid Storage Area S.W. Corner.

Score: S_M = 9

S_{FE} =

S_{DC} =

Total = 9

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 ~~Containment~~	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 (12) 14 18	1		18	
~~Hazardous Waste~~ Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	12 0	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 3 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical / Radioactive	9,126	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 15.9$		

$S_M = 15.9 / 1.73 = 9$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Grease Pit South of CPP-608.

Score: S_M = 9

S_{FE} =

S_{DC} =

Total = 9

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] ~~Containment~~	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 (12) 14 18	1		18	
~~Hazardous~~ Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
~~Radioactive~~					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1. b.2.)		4a. 4b.	13 0	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	9,126	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100		S'_{gw} = S^s_{gw} =	15.9		

$S_M = 15.9 / 1.73 = 9$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Grease Pit north of CPP-651.

Score: S_M = 9

S_{FE} =

S_{DC} =

Total = 9

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] ~~Containment~~	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 9 (12) 14 18	1		18	
~~Hazardous Waste~~ Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	12 0	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	9,126	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100			S'_{gw} = S^2_{gw} = 15.9		

$S_m = 15.9/1.73 = 9$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Service Waste Line from PEW to CPP-751 (PEW evaporator overheads).

Score: S_M = 9

S_{FE} =

S_{DC} =

Total = 9

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
[3] ~~Containment~~	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
~~Hazardous Waste~~ Quantity	0 1 2 (3) 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a.	18	26	
		4b.	0		
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5] If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical Radioactive	8,424	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100			S^c_{gw} = S^o_{gw} = 14.7		

$S_m = 14.7 / 1.73 = 9$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Organic Solvent and Misc. Storage Area W. of CPP-660.

Score: S_M = 8

S_{FE} =

S_{DC} =

Total = 8

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	0 3 6 9 (12) 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	3 0	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical Radioactive	7722	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			S^s_{gw} = S^s_{gw} = 13.5		

$Sm = 13.5 / 1.73 = 8$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

YDB-105 HF Tank

Neutralization Pit

Dry Well

Score: S_M = 8

S_{FE} =

S_{DC} =

Total = 8

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a.	11	26	
		4b.	0		
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical	7,722	57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive			
[7] Divide Line [6] by 57,330 and Multiply by 100		$S'_{gw} = S^c_{gw}$		13.5	

$S_M = 13.5 / 1.73 = 8$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Limestone Pit by CPP-601 and French Drain.

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	10 6	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical Radioactive	7,020	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			S^{s}_{gw} = S^{s}_{gw} = 12.2		

$S_m = 12.2/1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Drainage Ditch by CPP-637 (West).

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	18 0	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical / Radioactive	7,020	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 12.2$		

$Sm = 12.2 / 1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Nitric Acid Seepage by CPP-734.

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	18	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 1 3 (7) 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	10 0	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 — If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Chemical Radioactive	3,070	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 12.2$		

$Sm = 12.2 / 1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Gravel Pits #1, #2 Area.

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
~~Hazardous Waste~~ Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)	4a. 4b.		10 7	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5 / If Line 1 is 0, Multiply 2 x 3 x 4 x 5	Chemical / Radioactive		7,020	57,330	
7 Divide Line 6 by 57,330 and Multiply by 100	$S'_{gw} = S^c_{gw} = 12.2$				

$SM = 12.2/1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

CPP-621 Acid Storage Area.

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	0 3 6 (9) 12 14 18	1		18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	(0) 1 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1, b.2.)		4a. 4b.	18	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5] If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical Radioactive	7,020	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^0_{gw} = 12.2$		

$Sm = 12.2 / 1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Peach Bottom Cont. Soil Storage Area.

Score: S_M = 7

S_{FE} =

S_{DC} =

Total = 7

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 7 (11) 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	0 11	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical		57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive	6,534		
[7] Divide Line [6] by 57,330 and Multiply by 100		S'_{gw} = S^2_{gw} =		11.4	

$Sm = 11.4 / 1.73 = 7$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

CPP-603 to CPP-604 transfer line leak by Peach Bottom.

Score: S_M = 4

S_{FE} =

S_{DC} =

Total = 4

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] ~~Containment~~	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
~~Hazardous~~ Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 (7) 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	0 7	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical		57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive	4158		
[7] Divide Line [6] by 57,330 and Multiply by 100			S_{gw}^{r} = S_{gw}^{r} = 7.3		

$S_M = 7.3 / 1.73 = 4$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

CPP-603 Temp. Storage Area (Bone yard) (Laydown Area).

Score: S_M = 4

S_{FE} =

S_{DC} =

Total = 4

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 ~~Containment~~	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
~~Hazardous~~ Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 (7) 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a.	0	26	
		4b.	7		
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical		57.330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive	4,158		
7 Divide Line 6 by 57.330 and Multiply by 100		$S^{r}_{gw} = S^{s}_{gw} = 7.3$			

$Sm = 7.3 / 1.73 = 4$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Fuel Storage Basin - Dry Well

Score: S_M = 4

S_{FE} =

S_{DC} =

Total = 4

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
	Total Route Characteristics Score		6	15	
[3] ~~Containment~~	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
~~Hazardous Waste~~ Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 (7) 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
	Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)	4a. 4b.	9 7	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
	Total Targets Score		33	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]	Chemical			57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]	Radioactive		4,158		
[7] Divide Line [6] by 57,330 and Multiply by 100	$S'_{gw} = S^c_{gw} \cdot 7.3$				

$Sm = 7.3 / 1.73 = 4$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Trench East of CPP-603 Fuel Storage Basin.

Score: S_M = 4

S_{FE} =

S_{DC} =

Total = 4

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 3 (7) 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	0 7	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5] If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Chemical Radioactive	 4,158	57,330	
[7] Divide Line [6] by 57,330 and Multiply by 100			S'_{gw} = S^s_{gw} = 7.3		

$Sm = 7.3 / 1.73 = 4$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

WM-181 transfer line to PEW evaporator.

Score: S_M = 2

S_{FE} =

S_{DC} =

Total = 2

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 ~~Containment~~	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistance	(0) 3 6 9 12 14 18	1		18	
~~Hazardous Waste~~ Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 1 (3) 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1, b.2.)		4a. / 4b.	9 / 3	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / ~~12~~ 16 18 20 / 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical		57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive	2,106		
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^a_{gw} \cdot 3.7$		

$Sm = 3.7 / 1.73 = 2$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Old Sewage Treatment drain tiles and outfall line.

Score: S_M = 1

S_{FE} =

S_{DC} =

Total = 1

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical					
a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive					
b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 (1) 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	9	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 36 40	1		40	
Total Targets Score			39	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical		57.330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive	702		
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 1.2$		

$Sm = 1.2 / 1.73 = 1$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

NE corner of South Basin (CPP-603).

Score: S_M = 1

S_{FE} =

S_{DC} =

Total = 1

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line 4. If Observed Release is Given a Score of 0, Proceed to Line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 (1) 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 (1) 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a, b.1, b.2.)		4a. 4b.	9	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 (12) 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
6 If Line 1 is 45, Multiply 1 x 4 x 5		Chemical		57,330	
If Line 1 is 0, Multiply 2 x 3 x 4 x 5		Radioactive	594		
7 Divide Line 6 by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 1.04$		

$Sm = 1.04 / 1.73 = 1$

mHRS COVER SHEET

Facility Name: Idaho National Engineering Laboratory

Location: Idaho Chemical Processing Plant

EPA Region: X

Person(s) in Charge of Facility:

Name of Review: D. J. Poland/R. L. Nebeker Date: 1-15-86

General Description of Facility:

Underground carbon steel line leak of 21,000 gal. at CPP-603 (1973)

Score: S_M = 1

S_{FE} =

S_{DC} =

Total = 1

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If Observed Release is Given a Score of 45, Proceed to Line [4]. If Observed Release is Given a Score of 0, Proceed to Line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	(0) 1 2 3	2		6	
Net Precipitation	(0) 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1		3	
Physical State	0 1 2 (3)	1		3	
Total Route Characteristics Score			6	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Chemical a. Toxicity/Persistence	(0) 3 6 9 12 14 18	1		18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1		8	
Radioactive b.1 Maximum Observed	0 1 3 7 11 15 21 26	1		26	
b.2 Maximum Potential	0 (1) 3 7 11 15 21 26	1		26	
Total Waste Characteristics Score (Largest of 4a. b.1, b.2.)		4a. 4b.	9	26	
[5] Targets					3.5
Ground Water Use	0 1 2 (3)	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 (24) 30 32 35 40	1		40	
Total Targets Score			33	49	
[6] If Line [1] is 45, Multiply [1] x [4] x [5]		Chemical		57,330	
If Line [1] is 0, Multiply [2] x [3] x [4] x [5]		Radioactive	594		
[7] Divide Line [6] by 57,330 and Multiply by 100			$S'_{gw} = S^c_{gw} = 1.04$		

$Sm = 1.04 / 1.73 = 1$

APPENDIX E

GLOSSARY AND ABBREVIATIONS

AEC	Atomic Energy Commission; predecessor to the Department of Energy
ANL-W	Argonne National Laboratory-West
Alluvium	Sediment deposited by flowing water.
Aquifer	A zone of permeable rock on soil which is saturated with water.
Calcination	A process where liquid waste is sprayed onto the surface of hot granular particles as they are being agitated in a vessel. The liquid evaporates, and the solids adhere to the particles.
Calcine	Solids with the consistency of sand mixed with powder produced by the calcination process.
Cask	A massive shipping container which provides shielding from highly radioactive materials.
CERCLA	The Comprehensive Environmental Response, Compensation, and Liability Act.
CFA	Central Facilities Area; an INEL area.
CH	Chicago Operations office of the DOE.
Curie	A unit of radioactivity (decay rate of a radioactive substance) defined as 3.7×10^{10} (37 billion) disintegrations per second.
Decay	The spontaneous transformation of one nuclide into a different nuclide or into a different energy state of the same nuclide.
Decontamination	The selective removal of radioactive material from a surface or from within another material.
Diurnal	Having daily cycles.
DOE	Department of Energy
EG&G Idaho	Prime operating contractor for the INEL.
ENICO	Exxon Nuclear Idaho Company; operating contractor at the INEL.
ESRP	Eastern Snake River Plain.

Fission Products	A nuclide produced by the fission of a heavy element or the daughter(s) resulting from the radioactive decay of the nuclide thus formed.
Fuel Processing	Recovery of unused nuclear fuel from used fuel elements.
Groundwater	Water beneath the earth's surface between or with in saturated soil and rock.
Halflife	The time required for one-half the atoms of a particular nuclide to disintegrate by radioactive decay.
HRS	Hazard Ranking System.
ICPP	Idaho Chemical Processing Plant.
ID	Idaho Operations Office of the DOE.
INEL	Idaho National Engineering Laboratory.
Injection Well	A well through which cooling water is returned to the aquifer.
Isotope	A form of the same atom having a different atomic weight.
MHRS	Modified Hazard Ranking System.
Migration	The natural travel of a material through the air, soil, or groundwater.
NOAA	The National Oceanic and Atmospheric Administration.
NRTS	National Reactor Testing Station; previous name of the INEL.
Nuclide	A species of atom characterized by the number of neutrons and protons in the nucleus and the energy content of the nucleus.
PCBs	Polychlorinated biphenyls.
PEW	Process Equipment Waste.
Playa	A dry, flat area at the lowest part of an undrained desert basin.
PNRO	Pittsburgh Naval Reactor Office.
Radioactive	Spontaneously disintegrating; emitting ionizing radiation.

R (Roentgen)	A unit of radiation.
RWMC	Radioactive Waste Management Complex; an INEL facility.
TAN	Test Area North; an INEL facility.
TRA	Test Reactor Area; an INEL facility.
Tritium	A radioactive isotope of hydrogen.
UREP	Utilities Replacement and Expansion Project.
WCF	Waste Calcining Facility at the ICPP.
WINCO	Westinghouse Idaho Nuclear Company; operator of the ICPP.